

Listing of Claims

1. (Canceled)
2. (Currently Amended) A method for increasing atmospheric oxygen concentration within an occupant cabin of an aircraft, said method comprising:
 - separating oxygen from ambient air onboard an aircraft thereby establishing a high-concentration oxygen supply;
 - dispensing oxygen from the high-concentration oxygen supply to an occupant cabin of the aircraft ~~thereby increasing the level of oxygen concentration within the cabin to a level greater than eighty percent of that which is experienced at standard sea level atmospheric pressure to increase a partial pressure of oxygen at a current internal cabin pressure; and~~
 - directing oxygen from the high-concentration oxygen supply overboard if a lower atmospheric oxygen concentration is required.
3. (Currently Amended) A method for increasing nitrogen concentration within regions of an aircraft, said method comprising:
 - separating nitrogen from ambient air onboard an aircraft thereby establishing a high-concentration nitrogen supply;
 - dispensing ~~high-concentration~~ nitrogen from the high-concentration nitrogen supply to a fire-susceptible, internal non-habitable region outside ~~the~~ a fuel tank of the aircraft thereby decreasing the capability for the an atmosphere in the fire-susceptible, internal non-habitable region therein to support combustion;
 - detecting an oxygen concentration in a habitable region of the aircraft;
 - determining that a reduced oxygen concentration is required in the habitable region of the aircraft, and
 - adding nitrogen from the high-concentration nitrogen supply into the habitable region to dilute the oxygen concentration if the reduced oxygen concentration is required.

4. (Currently Amended) A method for monitoring partial pressure of oxygen in an occupant cabin of an aircraft ~~as well as~~ and in fire-susceptible, non-habitable areas of the aircraft, said method comprising:

establishing a high-concentration oxygen supply;

continuously detecting an absolute pressure and an oxygen percentage in areas of the aircraft the occupant cabin and the fire-susceptible, non-habitable areas of the aircraft,

computing a partial pressure of oxygen ~~in these areas~~ within the occupant cabin and the fire-susceptible, non-habitable areas of the aircraft based upon the absolute pressure and the oxygen percentage; and

reporting the resulting partial pressure of oxygen values to a central control system; and dispensing oxygen from the high-concentration oxygen supply under a control of the central control system into the occupant cabin based, at least in part, on the partial pressure of oxygen.

5. (Currently Amended) A method for controlling a degree of oxygen/nitrogen shift of incoming air in response to a partial pressure of oxygen in areas of an aircraft, said method comprising:

~~continuously reconfiguring the system pressures and flows in response to reported partial pressure of oxygen values, flight parameters, aircraft configuration, and smoke/fire warning status~~

dispensing an oxygen flow from a high-concentration oxygen supply to an occupant cabin of the aircraft to increase the level of oxygen concentration within the cabin;

dispensing a nitrogen flow from a high-concentration nitrogen supply to a fire-susceptible, internal non-habitable region outside a fuel tank of the aircraft to decrease the capability for the atmosphere therein to support combustion; and

varying the oxygen flow and the nitrogen flow based in part on a detected condition in the aircraft.

6. (Currently Amended) A method for ~~re-mixing~~ controlling an atmosphere in occupied and unoccupied areas of an aircraft to ~~quickly re-establish a natural, at altitude, partial pressure of oxygen,~~ said method comprising:

establishing a supply of nitrogen rich air by separating nitrogen from ambient air onboard the aircraft;

storing the supply of nitrogen rich air in an unoccupied area; and

introducing the nitrogen rich air stored in the ~~non-habitable areas of the aircraft~~ the unoccupied area into the ~~an~~ occupied, ~~oxygen-enriched~~ area.

7. (Currently Amended) A method for lowering a partial pressure of oxygen below a natural, at altitude level in response to fire in a habitable areas area of an aircraft, said method comprising:

establishing a supply of nitrogen rich air by separating nitrogen from ambient air onboard the aircraft;

establishing a supply of oxygen rich air by separating oxygen from ambient air onboard the aircraft; and

introducing the nitrogen rich air stored in the non-habitable areas area of the aircraft into ~~occupied, oxygen-enriched areas~~ the habitable area, in conjunction with directing the oxygen rich air stream from air-separators overboard while directing a nitrogen-rich stream into the habitable areas if a fire is detected onboard the aircraft.

8. (Currently Amended) A method for adjusting nitrogen and oxygen concentrations within regions of an aircraft, said method comprising:

separating nitrogen from ambient air onboard the aircraft thereby establishing a high-concentration nitrogen supply in a first location; and

dispensing high-concentration nitrogen from the first location supply to a fire-susceptible, non-habitable internal region separate from a fuel tank, of the aircraft where the high concentration nitrogen is ~~reservoired~~ thereby decreasing a capability for an atmosphere therein of the fire-susceptible, non-habitable internal region to support combustion by reducing a partial pressure of oxygen within the atmosphere.

9. (Currently Amended) The method ~~as recited in~~ of claim 8, ~~said method~~ further comprising:

separating oxygen from ambient air onboard the aircraft thereby establishing a high-concentration oxygen supply; and

dispensing high-concentration oxygen from the high-concentration oxygen supply to an occupant cabin of the aircraft thereby increasing a level of oxygen concentration within the cabin to a level greater than a naturally occurring partial pressure of oxygen at an experienced internal cabin pressure.

10. (Currently Amended) The method ~~as recited in~~ of claim 9, ~~said method~~ further comprising:

determining that reduced oxygen concentration is required in the occupant cabin, and
responsively initiating a ~~remixing~~ mixing of the reservoir high-concentration nitrogen, thereby diluting the oxygen concentration in the occupant cabin.

11. (Currently Amended) The method ~~as recited in~~ of claim 3, where the fire-susceptible, internal non-habitable region outside the fuel tank comprises at least one of: a cabling duct, a baggage compartment, a radio rack compartment, and an electrical wiring compartment.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Currently Amended) The method ~~as recited in~~ of claim ~~16~~ 8, wherein the fire-susceptible, non-habitable internal region outside the fuel tank is a cabling duct.

18. (Currently Amended) The method ~~as recited in~~ of claim 46 8, wherein the fire-susceptible, non-habitable internal region outside the fuel tank is a baggage compartment.
19. (Currently Amended) The method ~~as recited in~~ of claim 46 8, wherein the fire-susceptible, non-habitable internal region outside the fuel tank is a radio rack compartment.
20. (Currently Amended) The method ~~as recited in~~ of claim 46 8, wherein the fire-susceptible, non-habitable internal region outside the fuel tank is an electrical wiring compartment.
21. (New) The method of claim 5, wherein the detected condition is at least one of a partial pressure of oxygen values, flight parameters, aircraft configuration, and smoke/fire warning status.
22. (New) The method of claim 6, wherein the occupied area comprises at least one of: a passenger cabin, a cockpit, a lavatory, a galley, and a vestibule.
23. (New) The method of claim 6, wherein the unoccupied area comprises at least one of: a cabling duct, a baggage compartment, a radio rack compartment, and an electrical wiring compartment.
24. (New) A system for adjusting a nitrogen concentration and an oxygen concentration within regions of an aircraft, the system comprising:
a gas separation unit to separate ambient air from a habitable area into a nitrogen rich flow and an oxygen rich flow;
a plurality of sensors monitoring at least one condition within at least one region of an aircraft; and
a central control unit controlling a dispensation of the nitrogen rich flow and the oxygen rich flow based in part on an output of the plurality of sensors.

25. (New) The system of claim 24, wherein the central control unit causes the dispensation of the nitrogen rich flow into the habitable area if a reduced oxygen concentration in the habitable area is required.

26. (New) The system of claim 24, wherein the central control unit causes the dispensation of the oxygen rich flow into the habitable area if a higher oxygen concentration in the habitable area is required.

27. (New) The system of claim 24, wherein the central control unit causes the dispensation of a portion of the oxygen rich flow overboard if a reduced oxygen concentration in the habitable area is required.

28. (New) The system of claim 24, wherein the habitable area comprises at least one of: a passenger cabin, a cockpit, a lavatory, a galley, and a vestibule.